

[CLAIMS]

[Claim 1]

A biodegradable starch bowl being prepared to have a desired shape by heating and pressurizing a composition for the biodegradable starch bowl comprising
5 unmodified starch of 20-60 wt.%; pulp fiber powder of 5-30 wt.%; solvent of 30-60 wt.%; photo catalyst of 0.1-2.0 wt.%; preservative of 0.01-1 wt.%; and releasing agent of 0.5-5 wt.%, and a biodegradable film being attached to an inner surface of the bowl.

[Claim 2]

The biodegradable starch bowl according to claim 1, wherein the
10 biodegradable film is made of one or more selected from a group consisting of polylactic acid, polycaprolactone, polybutylene succinate, polyethylene succinate, polyvinyl alcohol, polyglycolic acid, ester starch and cellulose acetate.

[Claim 3]

The biodegradable starch bowl according to claim 2, wherein the
15 biodegradable film has a thickness of 100-300 μm .

[Claim 4]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the unmodified starch is one or more selected from a group consisting of corn, potato, wheat, rice, tapioca and sweet potato.

20 [Claim 5]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the pulp fiber powder has a fiber length of 10 ~ 200 μm .

[Claim 6]

The biodegradable starch bowl according to claim 5, wherein the pulp fiber
25 powder is made by crushing a broadleaf tree.

[Claim 7]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the photo catalyst is a titanium dioxide in which an anatase content is 70% or more.

[Claim 8]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the photo catalyst is a titanium dioxide doped with one or more selected from a group consisting of $\text{Fe(II)(Fe}^{3+})$, vanadium (V), molybdenum (Mo), niobium (Nb) and platinum (Pt).

[Claim 9]

The biodegradable starch bowl according to claim 8, wherein the photo catalyst is a titanium dioxide doped with $\text{Fe(II)(Fe}^{3+})$.

[Claim 10]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the photo catalyst is a titanium dioxide added with one or more selected from metal oxides group consisting of silicon dioxide, vanadic pentoxide and tungsten oxide.

[Claim 11]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the preservative is one or more selected from a group consisting of sorbate, potassium sorbate, sodium benzoate and sodium propionate.

[Claim 12]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the releasing agent is one or more selected from a group consisting of monostearyl citrate and magnesium stearate.

[Claim 13]

The biodegradable starch bowl according to claim 12, wherein the releasing agent is a mixture of monostearyl citrate and magnesium stearate having the mixing ratio of 1:1.5 by weight.

[Claim 14]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the solvent is one or more selected from a group consisting of water, alcohol, alkaline aqueous solution and acidic aqueous solution.

[Claim 15]

The biodegradable starch bowl according to claim 14, wherein the solvent is water.

[Claim 16]

- 5 A method for preparing a biodegradable starch bowl comprising steps of:
- preparing a composition for a biodegradable starch bowl comprising unmodified starch of 20-60 wt.%; pulp fiber powder of 5-30 wt.%; solvent of 30-60 wt.%; photo catalyst of 0.1-2.0 wt.%; preservative of 0.01-1 wt.%; and releasing agent of 0.5-5 wt.% (S1);
- 10 preparing a bowl having a desired shape by heating and pressurizing the composition (S2);
- heating a biodegradable film so as to be softened (S3); and
- positioning the softened film on an upper part of the bowl, and then pressurizing the film into the bowl with vacuum suction or air injection from an
- 15 exterior, thereby attaching the film to an inner surface of the bowl (S4).

[Claim 17]

- The method for preparing a biodegradable starch bowl according to claim 16, wherein the biodegradable film made of one or more selected from a group consisting of polylactic acid, polycaprolactone, polybutylene succinate, polyethylene succinate,
- 20 polyvinyl alcohol, polyglycolic acid, ester starch and cellulose acetate is used in the step of S3.

[Claim 18]

- The method for preparing a biodegradable starch bowl according to claim 17, wherein the biodegradable film having a thickness of 100~300 μ m is used in the step of
- 25 S3.

[Claim 19]

- The method for preparing a biodegradable starch bowl according to claim 16, wherein the film is pressurized into the bowl with the air injection from an exterior and

the vacuum-suction at the same time and thereby the film is attached to the inner surface of the bowl in the step of S4.

[Claim 20]

The method for preparing a biodegradable starch bowl according to any one
5 of claim 16 to 19, wherein the unmodified starch being one or more selected from a group consisting of corn, potato, wheat, rice, tapioca and sweet potato is used in the step of S1.

[Claim 21]

The method for preparing a biodegradable starch bowl according to any one
10 of claim 16 to 19, wherein the pulp fiber powder having a fiber length of 10 ~ 200 μm is used in the step of S1.

[Claim 22]

The method for preparing a biodegradable starch bowl according to claim 21,
wherein the pulp fiber powder being made by crushing a broadleaf tree is used in the
15 step of S1.

[Claim 23]

The method for preparing a biodegradable starch bowl according to any one
of claim 16 to 19, wherein the photo catalyst being a titanium dioxide in which an anatase content is 70% or more is used in the step of S1.

20 [Claim 24]

The method for preparing a biodegradable starch bowl according to any one
of claim 16 to 19, wherein the photo catalyst being a titanium dioxide doped with one or more selected from a group consisting of Fe(II)(Fe³⁺), vanadium (V), molybdenum (Mo), niobium (Nb) and platinum (Pt) is used in the step of S1.

25 [Claim 25]

The method for preparing a biodegradable starch bowl according to claim 24,
wherein the photo catalyst being a titanium dioxide doped with Fe(II)(Fe³⁺) is used in the step of S1.

[Claim 26]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the photo catalyst being a titanium dioxide added with one or more selected from metal oxides group consisting of silicon dioxide, vanadic
5 pentoxide and tungsten oxide is used in the step of S1.

[Claim 27]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the preservative being one or more selected from a group consisting of sorbate, potassium sorbate, sodium benzoate and sodium propionate is
10 used in the step of S1.

[Claim 28]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the releasing agent being one or more selected from a group consisting of monostearyl citrate and magnesium stearate is used in the step of S1.

15 [Claim 29]

The method for preparing a biodegradable starch bowl according to claim 28, wherein the releasing agent being a mixture of monostearyl citrate and magnesium stearate having the mixing ratio of 1:1.5 by weight is used in the step of S1.

[Claim 30]

20 The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the solvent being one or more selected from a group consisting of water, alcohol, alkaline aqueous solution and acidic aqueous solution is used in the step of S1.

[Claim 31]

25 The method for preparing a biodegradable starch bowl according to claim 30, wherein the solvent being water is used in the step of S1.